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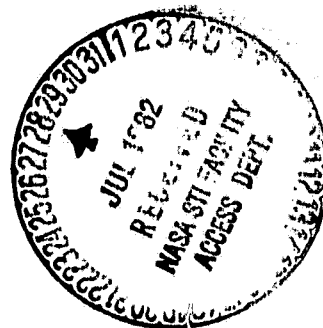
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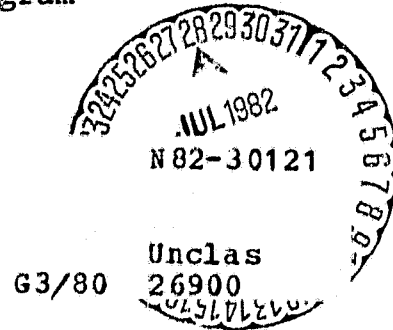
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THE SCHOOL OF ENGINEERING
HOWARD UNIVERSITY
WASHINGTON, D.C. 20059



PREFACE PROGRAM
Preliminary Report On Summer 1976 Program

(NASA-CR-170423) PREFRESHMAN AND
COOPERATIVE EDUCATION PROGRAM (Howard Univ.)
5 p HC A02/MF A01 CSCL 05I



Submitted to: The Goddard Space Flight
Center (NASA)

Program Director:

Elbert L. Cox
Elbert L. Cox
Program Director

General

For the fourth consecutive year, Howard University, with the cooperation of the Goddard Space Flight Center (NASA) has made available to entering freshmen, the Pre-Freshman and Cooperative Education Program (PREFACE). Other supporters of the program include The Energy Research and Development Administration and the General Electric Company.

The purpose of this program is to provide entering freshmen with intensive orientation and experiential programming so as to make the students entry into college as smooth and unencumbering as possible.

Thus far in the four years of the program, we have served 93 students, 70 of whom are still enrolled in engineering.

During the summer of 1976, there were 28 students enrolled in the program. Of this number, only one failed to enroll in the University this fall. A summary of the general character of student participation is illustrated in Table I.

TABLE I
Profile of Student Participation

| | 1973 | 1974 | 1975 | 1976 | TOTAL |
|---------------------------------|------|------|------|------|-------|
| No. enrolled in PREFACE | 15 | 24 | 26 | 28 | 93 |
| No. enrolled their 1st semester | 15 | 24 | 25 | 27 | 91 |
| Civil Engineering | 3 | 3 | 5 | 7 | 18 |
| Chemical Engineering | 5 | 8 | 6 | 7 | 26 |
| Electrical Engineering | 6 | 7 | 10 | 11 | 34 |
| Mechanical Engineering | 1 | 6 | 4 | 2 | 13 |
| No. still enrolled 1976 | | | | | |
| Civil Engineering | 2 | 2 | 4 | 7 | 15 |
| Chemical Engineering | 4** | 4 | 5 | 8 | 21 |
| Electrical Engineering | 5 | 3 | 9 | 9* | 26 |
| Mechanical Engineering | 0 | 3 | 3 | 2 | 8 |
| Females enrolled initially | 3 | 8 | 5 | 9 | 25 |
| Males enrolled initially | 12 | 16 | 21 | 19 | 68 |
| Females remaining 1976 | 2 | 7 | 4 | 8 | 21 |
| Males remaining 1976 | 9 | 5 | 17 | 18 | 49 |

* One student withdrew during semester.

** One student transferred to another engineering school in the Fall of 1976.

As shown in Table I, 11 of the 15 PREFACE students enrolled in the summer of 1973 are still enrolled in engineering in 1976. As mentioned in the Summary PREFACE Report of January 1974, a control group was established to compare the progress of the PREFACE group with a closely matched non-PREFACE engineering group. Of the 15 students in the control group, 9 are still enrolled in engineering in 1976. Additional progress data on the two groups will be submitted in a later report.

Program Selection

The selection of participants for the PREFACE Program followed the pattern established during the summer of 1975. As a result of this process, the persons chosen to participate is reflective of the general composition of students who are admitted to the School of Engineering.

Thus in this group, there were students who had high SAT scores (1000), high grade point averages in high school (3.50/4.00) and extensive preparation for college in that they had also taken high school calculus. On the other hand, there were other students whose SAT scores were less formidable (700-900), who had not had high school calculus, and whose high school GPA's were in the range 2.50 to 3.50/4.00.

These distinctions in various backgrounds of the participants in the program is taken into consideration in the way in which the program is structured. As a result then, each student is given the opportunity to reach a level of preparation for their first semester in school which approaches the expectations of the School of Engineering. This expectation is keyed to the level of mathematics which the student is qualified to take during the first semester of college. It is the desire of the school that each student be in a state of preparation such that they can begin their freshman year in a Calculus I course. Of the 21 students who entered the program in 1976, 23 (85%) began their freshmen year in Calculus I. This compared with an overall rate of 75% for the freshman class in the School of Engineering.

Program Description

As with the program of previous years, the 1976 program was divided into two phases. The first phase provided for a rigorous first two weeks of Engineering orientation and college (Howard variety) orientation. This phase of the program was characterized by formal and review math classes, presentations by faculty, staff, and outside practicing professionals; and student team projects. All participants were involved in this phase one of the program.

Phase two was characterized by the separation of the students into two groups. One was established as the study group and the other

as the pre-Co-Op group. The study group involved those students who possessed less high school math preparation. These particular students remained on campus and participated in a formal pre-calculus math class with the intent of bringing them up to par with the other students in the other group. While all but one of the students passed this course, three chose to repeat it because of a sense of dissatisfaction with having obtained a sufficient amount of the basic material.

The second group of students by virtue of having had all desired math courses in high school, were eligible to participate in the Co-Op phase of the PREFACE program, and they were so assigned. (See Table II).

A detailed copy of the program schedule is given in Appendix I.

Placement

With the entry into the program of NASA, students were given an additional option for placement. This was most timely in that the number of positions needed versus the number available with ERDA facilities did not coincide. As a result, participants were placed at the various work sites as shown in Table II.

TABLE II
Student Placement - 1976

| Student Majors | NASA-Goddard | ERDA-Argonne | ERDA-Brookhaven | Study Group |
|------------------------|--------------|--------------|-----------------|-------------|
| Civil Engineering | 2 | 0 | 0 | 5 |
| Chemical Engineering | 0 | 1 | 5 | 2 |
| Electrical Engineering | 4 | 0 | 2 | 5 |
| Mechanical Engineering | 2 | 0 | 0 | 0 |

Summary

In the feedback received from students in regards to their work experience, the general response was favorable. The exceptions noted were related to particular areas of placement at Brookhaven. A complete evaluation of the placement results will not be available however until we have received reports from the students' supervisors.


THE SCHOOL OF ENGINEERING
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PREFACE

Preliminary Report On Summer 1977 Program

Submitted to: The Goddard Space Flight
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General

Howard University, with the cooperation and support of the Goddard Space Flight Center (NASA) administered for the fifth consecutive year, the Pre-Freshman and Cooperative Education Program (PREFACE). Other supporters of the program in 1977 were the U.S. Department of Energy, the General Electric Company and for the first time, the American Can Company.

The purpose of the program continued to be one of providing to entering freshmen an extensive pre-engineering orientation and experimental opportunity. In so doing, it is expected, and thus far has been shown, that an experience such as this will prove meaningful in making their transition into the university a satisfactory and successful experience.

In the five years of the program, we have now served 124 students, 96 of whom are either still enrolled in the university or have graduated. During the summer of 1977, we had 30 students enrolled in the program - 15 females and 15 males. Of this number, two did not return to the university in the fall to enroll for their first semester.

A summary of student participation, including those in the Summer 1977 program were applicable, is provided in Table I.

TABLE 1

Profile of Student Participation

| | 1973 | 1974 | 1975 | 1976 | 1977* | Total |
|--|-----------|------|------|------|-------|-------|
| No. enrolled in PREFACE | 15 | 24 | 27 | 28 | 30 | 124 |
| No. enrolled their 1st sem. | 15 | 24 | 26 | 27 | 28 | 120 |
| No. still enrolled or graduated as of August 1977 | 11 | 12 | 23 | 22 | 28 | 96 |
| Females enrolled initially | 3 | 8 | 5 | 8 | 14 | 38 |
| Males enrolled initially | 12 | 16 | 21 | 19 | 14 | 82 |
| Females remaining or graduated as of August 1977 | 3 | 7 | 4 | 7 | 14 | 35 |
| Males remaining or graduated as of August 1977 | 8 | 5 | 19 | 15 | 14 | 61 |
| No. graduated as of August 1977 | 3 | 0 | 0 | 0 | 0 | 3 |
| Mean GPA as of August 1977 | 2.24/4.00 | 2.46 | 2.35 | 2.25 | | |
| Retention Rate (%) | 73 | 50 | 85 | 79 | | 72** |

*Participants are completing first semester in December 1977.

**Does not include Summer 1977 participants or 1974 participants.

Program Selection

The process of selecting students for the Summer 1977 program followed the pattern used for the Summer 1976 program. Therefore, students were chosen on the basis of how closely they reflected the general characteristics of students who had been cleared for admission to the School of Engineering for the school year beginning in Fall 1977. We thus had a group of students consisting of those who had had high SAT scores (1000), high grade point averages (GPA'S) in high school (2.50/4.00), and extensive pre-college preparation (in that they had also taken high school calculus). We also had in the Summer 1977 group those students who had not had high school calculus, and whose high school GPA's were in the modest range of 2.50 to 3.5/4.00.

We then structured the program as usual to take into consideration these distinctions in the participants background. Thus each student is given the opportunity to reach a level of preparation for their first semester in school which approaches the expectation that each student be in a state of preparation such that they can begin their freshman year in a calculus I course. Of the 28 students who entered the program in 1977, 21 lived up to this expectation.

Program Description

As with the program of previous years, the 1976 program was divided into two phases. The first phase provided for a rigorous first two weeks of Engineering and college (Howard variety) orientation. This phase of the program was characterized by formal and review math classes, presentations by faculty, staff, and outside practicing professionals, and team projects. All participants were involved in this phase one of the program.

Phase two was characterized by the separation of the students into two groups. One was established as the study group and the other as the pre-Co-Op group. The study group involved those students who possessed less high school math preparation. These particular students remained on campus and participated in a formal pre-calculus math class with the intent of bringing them up to par with the students in the other group. Students take this class on a pass (grade of "C" or better) or repeat basis. Of the ten students in this group, five successfully completed the class and five had to repeat in the Fall semester.

The pre-Co-Op group, having had all desired math courses in high school, participated in the Co-Op phase of the PREFACE Program and were placed as shown in Table II.

Placement

Students were again accorded three options of placement in the Summer 1977 program as were the Summer 1976 students. However, the

three options this year consisted of the then ERDA-Brookhaven Laboratory facility, NASA-Goddard Space Flight Center, and The American Can Company-Scranton, Penn. facility. The ERDA-Argonne National Laboratory withdrew from the Summer 1977 program.

Housing arrangements were made by the facilities at Brookhaven and Scranton. The university made arrangements for those students who participated with NASA. There were no apparent complications in this area.

A summary of the placement of students is illustrated in Table II below.

TABLE II
Student Placements-Summer 1977
PLACEMENT SITES

| Student Majors | DOE-Brookhaven | NASA-Goddard | American Can | Study Group |
|----------------|----------------|--------------|--------------|-------------|
| Civil Engr. | 2 | 2 | 0 | 2 |
| Chem. Engr. | 3 | 0 | 1 | 1 |
| Elect. Engr. | 2 | 6 | 0 | 4 |
| Mech. Engr. | 0 | 2 | 1 | 4 |

Summary

Feedback received from students this year suggests that unlike prior years of the program, there was a minimum of complications experienced. In spite of last minute funding and the withdrawal of Argonne from the program, we experienced little or no complications in student housing, transportation, or provisioning of stipends. That several of the students did not successfully (or better grade) their pre-calculus class is, we feel, a measure of the success of the program in that we were able to provide them with careful counseling and help them screenout their weaknesses early. This has obviously helped them not only in recognizing those weaknesses, but has also given them the encouragement to now successfully attack the problems with a minimum of the disenchantment that seems to befall many of those students who don't have these experiences until the thick of regular semester battle.

While students assigned to the DOE-Brookhaven facility were apparently quite satisfied with their training experiences, it is also apparent that more coordination between the University and the NASA and American Can facilities would be in order to shore-up training programs there. This is not unexpected however, in that both of those facilities are new to this type of program. However, they possess great capability for student training and a willingness to provide it, so we are confident in improvement in this aspect of the program in the coming year. The measure of success in this area of course will be the degree to which the participating facilities are willing, able, and active in providing the students with orientation and challenging work in areas related to their stated academic majors. Brookhaven apparently did very well in this regard in Summer 1977.

The mean first semester average for the 28 participants is 2.15, with the lowest GPA at 0.08 and the highest a 3.77. While there are many conclusions that might be drawn from this (some erroneously), we prefer to withhold drawing any conclusions until the students have completed a full year of work.

Biographical synopses on each of the participants (except Deborah Martin, Anita Thomas, and Michelle Thomas) and samples of the summer on-campus program schedules are provided in Appendixes A and B respectively.